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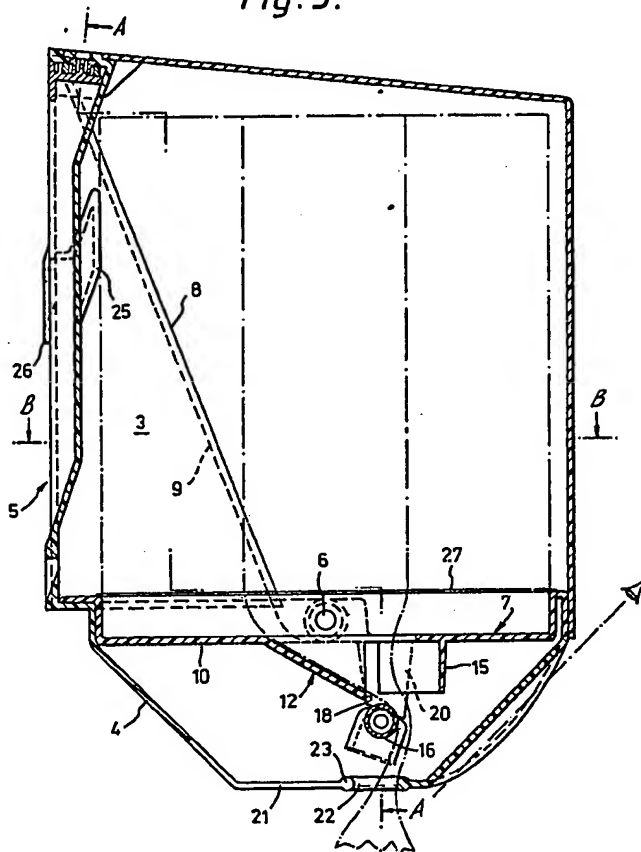
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(58) Field of search  
B8M

## (54) Coreless roll dispenser

(57) A dispenser for a coreless roll of web material eg toilet paper or paper towelling, comprises a housing within which a roll of material is supported in an upright position on a shelf 7. Material is fed from the centre of the roll through an opening in the shelf and passes over a roller 16 to a constricting aperture 22. The provision of roller 16 ensures that the path of the material to the constricting aperture is the same throughout the dispensing despite increasing size of the central bore of the roll. Aperture 22 may be surrounded by a bead 23 to ensure smooth dispensing and a chute 12 may be provided between the roller and the opening in the shelf 7. Water forming due to condensation may pass through drainage holes in upper part of shelf 7 and out through aperture 21 contiguous with aperture 22. The rear wall of the housing may be fitted, eg by slot hangers 26, to a wall and the lid may be lockable and downwardly pivotable about axle 6 for reloading of the dispenser.

Fig. 3.



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Fig. 1.

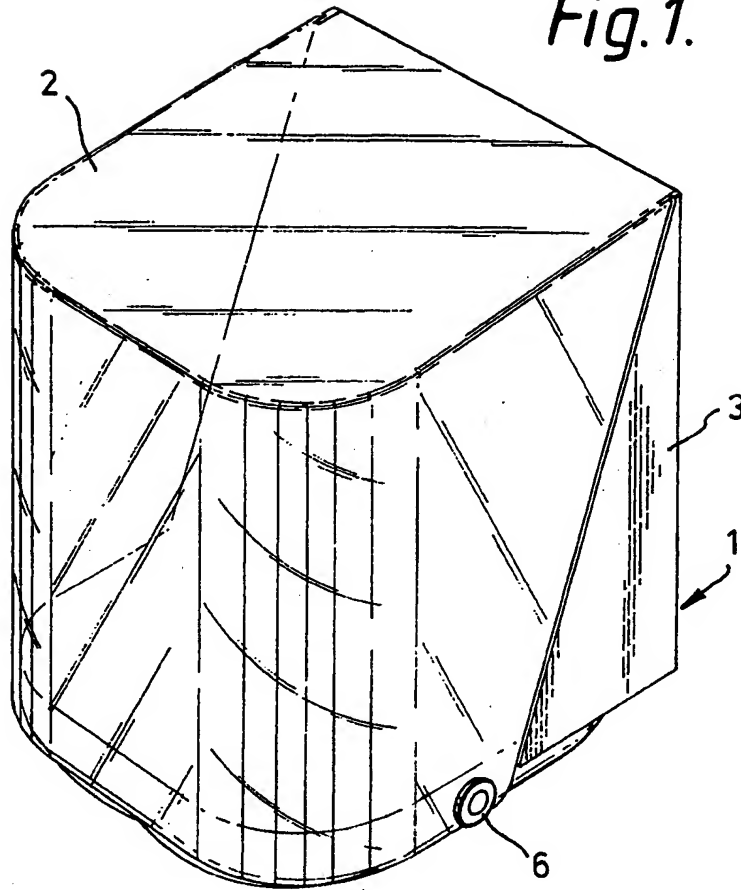


Fig. 2.

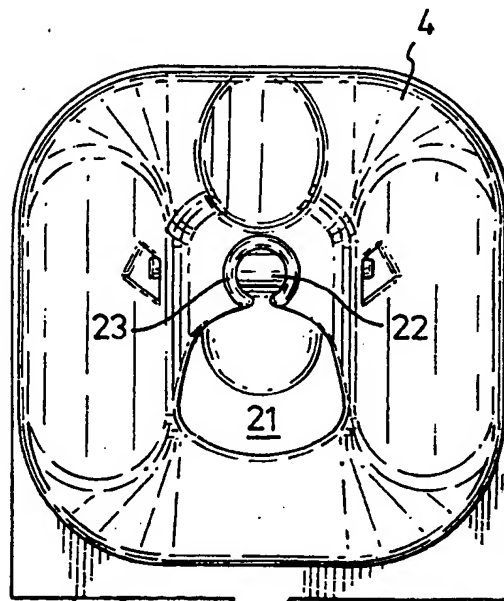


Fig. 3.

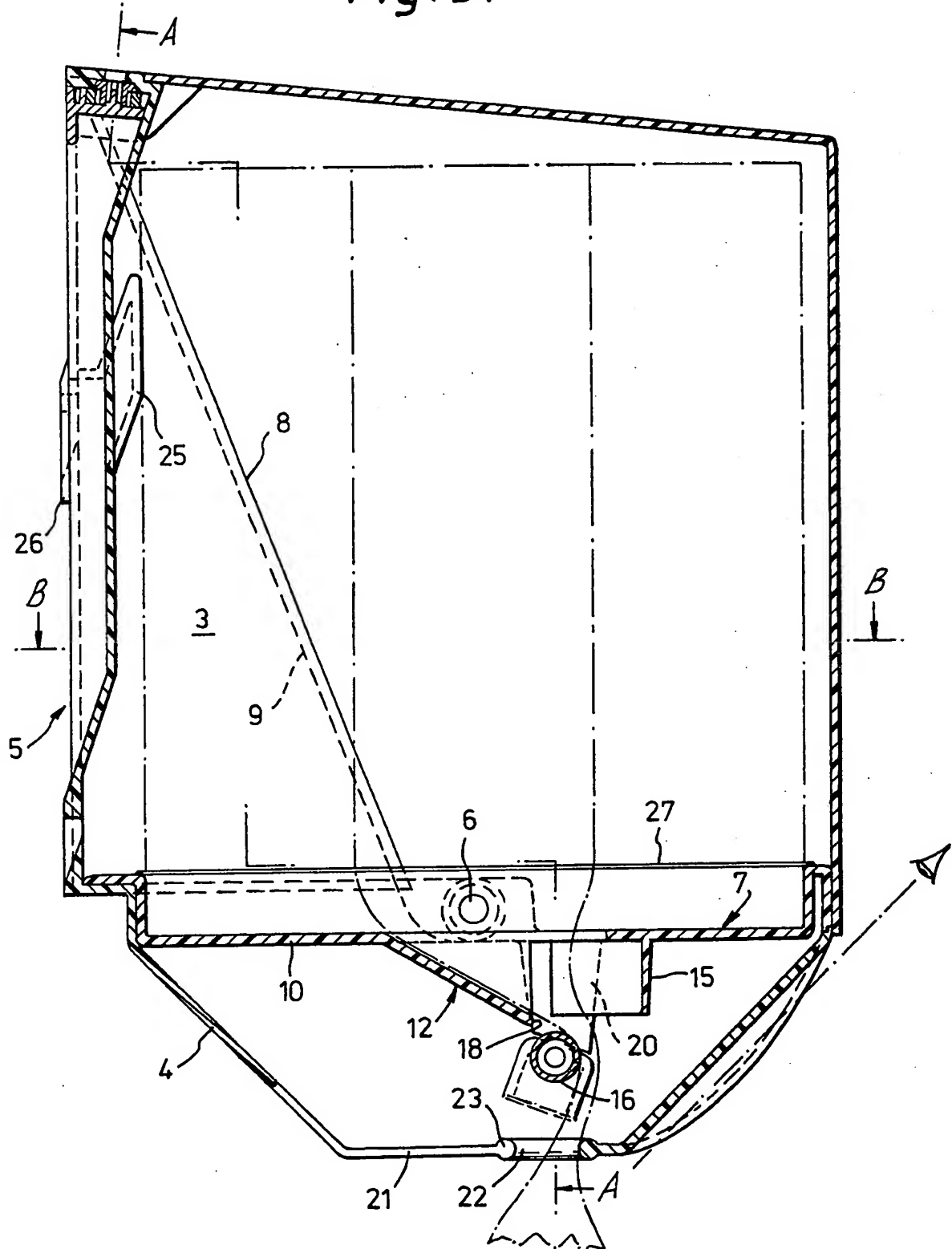
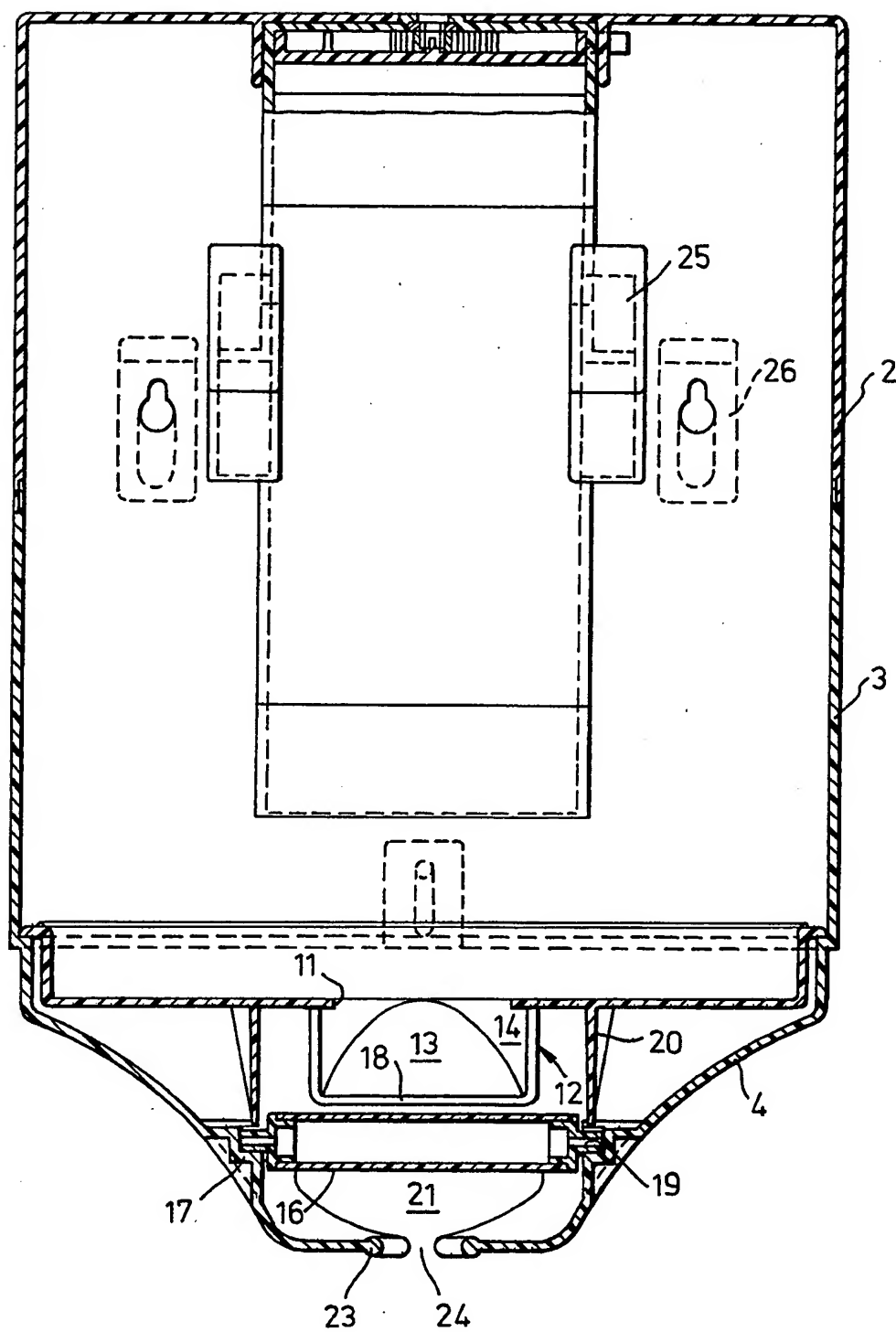


Fig. 4.





## SPECIFICATION

### Coreless roll dispenser

5 The invention relates to coreless roll dispensers which dispense web material, usually paper, from the centre of a loosely wound roll.

Such dispensers are frequently employed in toilets, petrol station forecourts, kitchens, or other  
10 places of work.

Controlled dispensing of material from such rolls has not been readily achieved in the past due to the variation in unravelling characteristics brought about by the increasing size of the central bore of the  
15 roll as it is dispensed.

The object of the present invention is to provide a suitable path for material unravelled from the roll which will provide for substantially constant unravelling characteristics of the roll and will permit  
20 controlled dispensing of the roll.

According to the present invention there is provided a dispenser for a coreless roll of web material, comprising roll support means adapted to support a roll in an upright position whilst allowing web  
25 material to be unravelled from the centre of the roll; web constricting means spaced from an end of a roll supported on said roll support means and through which web material can be dispensed; and a guide roller located between the end of the roll and the web constricting means; whereby web material  
30 dispensed from the centre of the roll passes over the guide roller and through the web constricting means.

The provision of a guide roller between the end of  
35 the roll and the constricting means results in the web material being delivered to the restricting means along a constant path throughout the dispensing of the roll.

This path acts with the constricting means to  
40 provide resistance to unravelling of the roll and to permit controlled dispensing. A force sufficient to avoid excessively rapid unravelling is required to pull the material over the roller and through the constricting means; the force not being great  
45 enough to cause tearing of the roll so long as it is applied downwardly.

Tearing off is readily achieved by a user simply by pulling the rope of web material towards him thus increasing the frictional force acting on the web by  
50 means of the constricting means.

Preferably the dispenser further comprises a housing for a roll, and the roll support means comprises a support surface located within the housing for supporting an end of the roll, and an opening in the support surface through which material unravelled  
55 from the centre of the roll may pass, said constricting means being mounted beneath the support surface and being adapted to receive web material for passage therethrough, and said guide roller being located between the opening in the support surface and the constricting means.

An embodiment of the invention will now be described with reference to the accompanying drawings in which:

65 *Figures 1 and 2 of the drawings show perspective*

and underneath views respectively of a dispenser, *Figure 3 shows a vertical section through a dispenser,*

*Figure 4 shows a further vertical section generally perpendicular to that of Figure 3 and taken on the line AA,*

*Figure 5 is a horizontal section through the dispenser taken on the line BB.*

The dispenser has a housing 1 which comprises  
75 opposite side walls 3, a rear wall 5 and a bottom wall 4; the housing being adapted to be supported in a generally vertical position as shown in Figure 3, for example, by means of fitments associated with the rear wall 5.

80 A lid 2, which may advantageously be made of transparent plastics material, is pivotally supported on the housing 1 by stub axles 6 and can be swung clockwise - as viewed in Figure 3 - about the axles 6 to a position (not shown) affording access to the  
85 interior of the housing.

Supported by the housing 1 at the general level of the bottom of the side walls is a shelf 7 which provides a support for the coreless roll of web material which is to be dispensed. Such a roll is  
90 dispensed from its centre as is known and shown in dotted lines in Figure 3.

The side walls 3 are generally triangular and are slightly set back adjacent their longest edge 3 so as to form a flush fitting with the corresponding edge 9  
95 of the lid.

In the described embodiment, the shelf 7 is supported in the housing simply by being seated on a suitably configured portion of the body comprising the junction between the bottom wall 4 and the side and rear walls 3 and 5. Means providing fixing of the shelf in this position could of course be provided if required. The shelf comprises a flat circular portion  
100 on which a roll is supported in use, and has a roughly central elliptical opening 11 therein which leads to a guide chute 12. The guide chute 12 has a flat guide surface 13 which extends downwardly from one side of the opening and is connected to the circular portion of the shelf by a vertical wall 14. A further curved wall depends from the underside of the shelf 7 and extends generally around the opposite side of the opening 11.

A roller 16 is supported in open-bearing 17 formed in the bottom wall 4 of the housing 1 and extends adjacent and just below the lower edge 18 of the  
115 guide surface 13. The roller is supported in the bearings 17 by trunnions 19 and, as shown, the roller comprises a hollow cylindrical central portion with trunnion-bearing inserts fitted into each end thereof. Alternatively, the roller may be made of unitary hollow or solid construction. Ribbed locating elements 20 depend from the shelf 7 to maintain the trunnions in the open-bearings 17.

Beneath the guide chute and roller, two contigu-  
125 uous apertures 21 and 22 are formed in the bottom wall of the housing 1. The aperture 21 being larger than the aperture 22 which is in the form of an open circle and is provide around its circumference with a thickened bead 23. The two apertures 21, 22 communicate via a constricted passage 24.

130 The operation of the dispenser is as follows. A full

roll of web material is loaded into the dispenser by opening the lid 2. Before placing the roll on the shelf 7, unrolling of the web from the centre of the roll is initiated and the free end thus provided is pushed down through the guide chute and over the roller 16. The roll is then placed on the shelf 7 and the lid closed. The aperture 21 is large enough to enable an operator to reach into the lower portion of the housing 1 and grasp the free end of the web and pull it downwardly and out of the dispenser. Web material may initially be fed out of the dispenser through the aperture 21 but the rope of web material will then be moved transverse to its length through the constricted passage 24 and will subsequently be fed out of the dispenser through the constricting aperture 22.

The shape and size of the constricting aperture 22 are chosen such that it will provide, along with the surrounding bead 23, a restricting path for the web material such that a downward pull will cause material to be dispensed in a controlled manner but without enough resistance to cause the web to tear. When sufficient material has been dispensed, an operator pulls the rope of material horizontally to increase the frictional contact with the bead, and the web will then tear leaving a new free end protruding from the aperture 22 to be easily pulled out by a subsequent user.

The provision of the roller at the bottom of the chute provides for the path of material to the aperture 22 to be the same throughout the dispensing of a roll despite the increasing size of the central bore of the roll. Furthermore the web is guided to the constricting aperture 22 without excessive frictional resistance and so the risk of the web tearing at a point upstream of the aperture is greatly reduced.

The front portion of the bottom wall has a generally part-circular profile so that the lid can be pivoted to a position wherein it hangs downwardly from the stub axles 6. A central part of this front portion is recessed, however, to provide for a better sight-line between a user and the free end of the web protruding from the aperture 22.

In order to prevent theft or vandalism it is advantageous for the lid 2 to be provided with a locking mechanism. This may comprise a rack and pinion lock as shown in the drawings or may be provided by a closure as described in our co-pending European Application (GB) 83304579.2 entitled "LOCKABLE LID DISPENSER".

The housing of the dispenser and the shelf are preferably moulded from plastics material such as Acrylonitrile - Butadiene - Styrene (ABS) which, suitably compounded, is tough, hard, and rigid and provides a high degree of abuse resistance. The lid 2 is also formed of tough plastics material and may advantageously be made transparent.

The rear wall of the housing has fitments moulded therein such that the dispenser can be hung on a wall or similar vertical surface. For this purpose reinforced slot hangers 26 are provided enabling the dispenser to be hung from a pair of screws or the like.

The rear wall is also provided with a pair of inclined recesses 25 which may co-operate with

prongs on a purpose made bracket (not shown) to enable the dispenser to be supported on a wall or a post to which the bracket is fixed.

In dispensers such as presently described there is frequently a problem of condensation inside the dispenser which may adversely affect the condition of the roll material. It is preferred, therefore, that a slight rim 27 is provided around the shelf 7 to prevent condensation water flowing into the circular wall of the shelf and wetting the web material. The upper parts of the shelf are also provided with drainage holes, not shown, so that water can drain therethrough into the bottom portion of the housing. Water running onto the bottom wall 4 will pass out through the aperture 21 and will be prevented from wetting the web material by the bead 23.

Rolls used in a dispenser such as described may be of any suitable material and will normally be of loosely rolled paper. The paper web may be perforated at intervals or not as preferred.

Although the roll, as shown, is dispensed by pulling material downwardly from the core, the dispenser might be adapted for the roll to be dispensed upwardly.

## CLAIMS

1. A dispenser for a coreless roll of web material, comprising roll support means adapted to support a roll in an upright position whilst allowing web material to be unravelled from the centre of the roll; web constricting means spaced from an end of a roll supported on said roll support means and through which web material can be dispensed; and a guide roller located between the end of the roll and the web constricting means; whereby web material dispensed from the centre of the roll passes over the guide roller and through the web constricting means.

2. A dispenser as claimed in claim 1, further comprising a housing for said roll, and wherein said roll support means comprises a support surface located within the housing for supporting an end of the roll, and an opening in the support surface through which material unravelled from the centre of the roll may pass, said constricting means being mounted beneath the support surface and being adapted to receive web material for passage therethrough, and said guide roller being located between the opening in the support surface and the constricting means.

3. A dispenser as claimed in claim 2, wherein the constricting means comprises a circular aperture in a lower wall of the housing.

4. A dispenser as claimed in claim 3, wherein the circular aperture is surrounded by a bead to allow smooth but controlled dispensing of material.

5. A dispenser as claimed in claim 3 or 4, wherein the circular aperture communicates via a restricted passage with a second contiguous aperture in the said lower wall of the housing.

6. A dispenser as claimed in any one of claims 2 to 5, wherein a chute is provided adjacent the opening in the support surface for guiding material passing therethrough to the roller.

7. A dispenser as claimed in claim 6, wherein the chute comprises a flat inclined surface extending from the support surface to a position adjacent the roller.

5 8. A dispenser as claimed in claim 7, wherein the support surface is provided by a shelf supported in the said housing and wherein the chute is formed integrally with the shelf and extends downwardly from the underside thereof adjacent the opening  
10 therein.

9. A dispenser as claimed in claim 8 wherein the roller is mounted for rotation in a lower portion of the housing beneath the shelf.

10. A dispenser as claimed in claim 8 or claim 9,  
15 wherein at least the housing and the shelf are made from moulded Acrylonitrile - Butadiene - Styrene.

11. A dispenser for a roll of web material substantially as described herein with reference to the accompanying drawings.



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